



OPERATION AND MAINTENANCE (O&M) PLAN GUIDELINES

There are several facets to completing a functional and compliant O&M Plan. The contents of this document include the following information that you should find useful in designing a Plan for your facility:

- A. O&M Plan Guidelines for Preparation**
- B. Rules Containing ECS and O&M Plan Provisions**
- C. Tips for Preparing an O&M Plan**
- D. O&M Plan and Templates**

By using the information and guidance presented, you should be well on your way to completing the required Plan. However, if you need additional assistance, feel free to contact the Business Assistant at 602-506-5102 or the Permitting Division at 602-618-9337.

A. O&M Plan Guidelines for Preparation

This document provides guidance in the preparation of O&M Plans required as part of an air quality permit and/or Maricopa County Air Pollution Control Regulations.

An O&M Plan describes the operation and maintenance required for an emission control system (ECS) to demonstrate that the ECS is being operated and maintained properly to achieve compliance with the requirements of the air quality permit and/or regulations.

Generally all O&M Plans include a description, operating parameters and limits, maintenance procedures and schedules, and recordkeeping requirements for the ECS.

It should also be noted that some industries have specific requirements imposed by federal, state, and county regulations, regarding the ECS and O&M Plans. To illustrate various requirements in the County Rules, templates have been included in Section D of this document.

Each ECS that is unique in type, capacity, or use should be contained in a separate O&M Plan. Multiple ECS can be combined in a single O&M Plan provided they are substantially similar in type, capacity, and use. However, to avoid confusion, especially in the recordkeeping requirements, it is preferable for each ECS to be described by a separate O&M Plan.

Following is a narrative description of the contents of each section of a typical O&M Plan.

1. General Information

This section of the O&M Plan identifies the business name and location, the permit number, the date of preparation of the plan/revision, a brief general description of the facility's overall operation, a description of the processes, operations, and/or equipment that are vented/ducted to the ECS including the pollutants to be controlled by the ECS.

Finally the last part of this General Section should describe the ECS by name, manufacturer, model number, serial number, facility equipment number, rated capacity and the number of ECS represented by this O&M Plan if more than one.

Additionally, a brief narrative description of the function of the ECS should be included that explains the selection of the key parameters and maintenance plan and how they demonstrate that the ECS complies with the requirements of the regulations and the permit conditions.

2. Operation Plan

This section of the O&M Plan identifies the key operating parameters of the ECS. The key operating parameters are quantifiable measurements (such as pressure drop, temperature, flow rate, and others) that, once properly defined for the ECS, are indicators that the ECS is functioning as designed and in accordance with the requirements of the regulations and permit conditions. Appropriate operating limits for these parameters are an essential element of the O&M plan.

If changing the location of a measurement device would affect its measurement of the parameter (for example, the location of a thermocouple in a thermal oxidizer), then the location of the device shall be documented either in the text of the O&M plan or through a scaled drawing.

Additionally as a part of the Operation Plan, an operations log sheet should be prepared and completed for every day the process and/or ECS is in operation. Operations log sheets shall, at a minimum, contain the following information: equipment identification; date and time of readings; identification of the individual recording the data; operating parameters to be monitored including units of measure, operating limits (upper and lower limits), and locations for recording measurements; measurement frequency; and room for additional information such as corrective action taken or general comments. It may be useful for facilities with multiple ECS covered by one O&M Plan to record data on a log sheet for each ECS.

All measurements shall be recorded including those outside the operating limits at the time readings are taken. A copy of the actual operation log sheet to be used at the facility shall be included in the O&M plan. Example operation log sheets are included below and are available for use.

The minimum acceptable operating parameters for common ECS are shown below:

Wet Scrubber: Scrubber system pressure drop and water recirculation rate (possibly pH level and conductivity, depending on application).

Thermal Oxidizer: Combustion temperature.

Catalytic Oxidizer: Pre-catalyst temperature, post-catalyst temperature and catalyst pressure drop.

Carbon Adsorption System: Adsorption temperature, desorption temperature, and effluent concentration.

Baghouse: Baghouse pressure drop and visible emissions (possibly inlet temperature, depending on application).

Cyclone: Visible emissions.

3. Maintenance Plan

This section of the O&M Plan identifies the maintenance procedures (such as inspections, cleanings, lubrications, adjustments, replacements, instrumentation calibrations, and others) that should be performed on a routine basis to ensure the equipment remains in the operating condition for which it was designed and that will enable it to perform its proper function when operating within the parameters in the operation plan.

Maintenance checklists should, at a minimum, contain the following information: equipment identification; date; identification of the individual performing the maintenance check; procedures to be performed including frequency of occurrence; results of inspection (e.g., acceptable, nozzle plugged, belt cracked, etc.); corrective action taken (e.g., none, cleaned nozzle, replaced belt, etc.); and room for

additional information such as observations or general comments. A copy of the actual maintenance checklist to be used at the facility is to be included in the O&M plan. Example maintenance checklists, containing general preventative maintenance that should be considered, are included below and are available for use.

In determining the maintenance that should be performed, the equipment manufacturer's recommendations for specific procedures and performance frequencies appropriate for the described equipment should be followed for the preparation of this maintenance plan. However, please do not substitute the manufacturer's O&M Plan for the preparation of the O&M Plan described in these guidelines.

4. Additional Information

Additional information such as process diagrams, equipment schematics, and similar documents may be included if they would be helpful in understanding the ECS and O&M plan.

B. Rules Containing ECS and O&M Plan Provisions

This section illustrates the various County Rules that contain provisions for ECS and O&M Plans applicable to the particular rule and what section of the rule those requirements can be found. While the list is not exhaustive, it provides a starting point for identifying processes and equipment that have an ECS and an accompanying O&M Plan.

List of Rules:

RULE 311 PARTICULATE MATTER FROM PROCESS INDUSTRIES

Sections 304 and 305

RULE 312 ABRASIVE BLASTING

Section 304

RULE 316 NONMETALLIC MINERAL PROCESSING

Section 305

RULE 319 GINNING OPERATIONS

Sections 302 and 303

RULE 322 POWER PLANT OPERATIONS

Section 306

RULE 323 FUEL BURNING EQUIPMENT

Section 306

RULE 330 VOLATILE ORGANIC COMPOUNDS

Section 304

RULE 331 SOLVENT CLEANING

Section 309

RULE 336 SURFACE COATING OPERATIONS

Section 306

RULE 337 GRAPHIC ARTS

Section 307

RULE 338 SEMICONDUCTOR MANUFACTURE

Section 306

RULE 339 VEGETABLE OIL EXTRACTION PROCESSES

Section 304

RULE 341 METAL INVESTMENT CASTING

Section 304

RULE 342 COATING WOOD FURNITURE AND FIXTURES

Appendix C

RULE 343 COMMERCIAL BREAD BAKERIES

Section 303

RULE 345 VEHICLE AND MOBILE EQUIPMENT COATING

Sections 308 and 504

RULE 346 COATING WOOD MILLWORK

Appendix A

RULE 347 FERROUS SAND CASTING

Sections 301 and 302

RULE 348 AEROSPACE MANUFACTURING AND REWORK OPERATIONS

Sections 302 and 303

RULE 349 PHARMACEUTICAL, COSMETIC AND VITAMIN MANUFACTURING

Sections 306 and 312

RULE 358 POLYSTYRENE FOAM OPERATIONS

Sections 305 and 306

C. Tips for Preparing an O&M Plan

1. Do not submit the manufacturer's O&M Plan.

The manufacturer's O&M Plan does not include everything the Air Quality Department requires and includes much more that we don't require, such as startup and shutdown procedures, spare parts inventory, and troubleshooting.

2. Read and follow the O&M Plan Guidelines.

The guidelines should contain all the instructions and templates necessary to complete an O&M Plan. The operations log sheets and maintenance checklists should also prove to be useful. We have attempted to simplify the process as much as possible.

3. Submit a separate O&M Plan for each unique control device that requires an O&M Plan.

Combining different control devices into one O&M Plan leads to confusion for everyone. Having separate O&M Plans allows for changes in one plan without having to resubmit all O&M Plans.

4. Do not submit an O&M plan for equipment that does not require one.

This sounds simple but it happens. It involves extra work for both the facility and the Department. If you are unsure about an O&M Plan requirement, contact Business Assistance at 602-506-5102 or the Permitting Division.

5. Check your permit conditions for specific requirements such as parameters, limits, training requirements, etc...

Permit conditions may specify particular parameters that shall be monitored; specific limits such as a minimum combustion temperature or training requirements to be included in the O&M Plan.

6. Be sure that operating parameters have reasonable upper and/or lower limits.

Limits that are too restrictive (3.0 to 3.5 inches H₂O) may be difficult to meet, whereas limits that allow too broad of an operating range (1 to 10 inches H₂O) have little or no value. Also, zero is not an acceptable lower limit for pressure drop as the unit may not even be operating.

7. Include a cover letter with the facility contact information.

Any questions that arise during the review of an O&M Plan can be addressed to the appropriate facility representative, as can the review letter.

8. If an approved O&M plan must be changed, submit the revised O&M plan in its entirety.

This will ensure everyone has a complete, up-to-date copy of the plan. The cover letter should identify the changes made and the reason(s) for the changes.

D. O&M Plan and Templates

http://www.maricopa.gov/aq/divisions/permit_engineering/applications/Default.aspx

Disclaimer: This document is meant to serve as a general guideline in the preparation of O&M plans. Since unique circumstances may exist, the Department reserves the right to request additional information to ensure compliance with air quality regulations and specific site conditions.